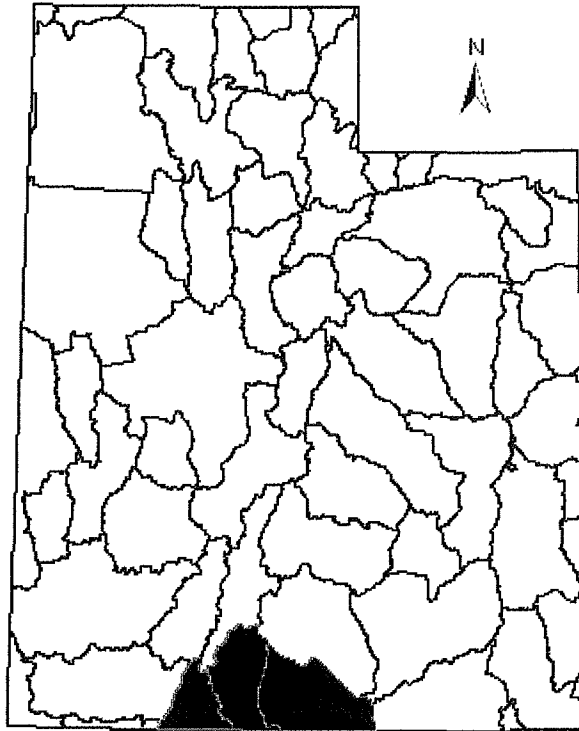


**KANAB CREEK, PARIA RIVER, KAIPAROWITZ PLATEAU
DRAINAGES MANAGEMENT PLAN
HYDROLOGIC UNITS 15010003, 14070007 AND 14070006**



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2007

Publication # 08-001

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- Appendix D. General Definitions of Sport Fish Classes for Utah Waters

INTRODUCTION

The Kanab Creek drainage (KCD), Hydrologic Unit 15010003, encompasses approximately 626 mi² of Kane County in southwest Utah (Figure 1). Glendale Bench to the west, the Paunsaugunt Plateau to the north, and the Skutumpah Terrace to the east bound the drainage. A tributary to the Colorado River, Kanab Creek originates below the rim of the Paunsaugunt Plateau near Alton and flows 29.7 miles south to the Utah-Arizona state line. Perennial headwaters of the drainage reach to 8300 feet elevation, while Kanab Creek exits the state at 4700 feet. Johnson Wash and Skutumpah Creek are the only other significant perennial streams in the drainage. Kanab Creek and Johnson Wash are the only streams in the drainage that have been catalogued by the Utah Division of Wildlife Resources (UDWR). There are no catalogued lakes or reservoirs in the drainage.

The Paria River drainage (PRD), Hydrologic Unit 14070007, encompasses approximately 1031 mi² of Kane and Garfield Counties in southern Utah (Figure 2). The Skutumpah Terrace and Paunsaugunt Plateau bound the drainage to the west, the Escalante Mountains to the northeast, and the Cockscomb to the east. The headwaters of the Paria River are found near the southern end of the Escalante Mountains, reaching up to 7200 feet elevation. The Paria River flows intermittently to the south with perennial flows ending at 4400 feet, approximately 11 miles north of the state line. The drainage eventually feeds the Colorado River. Major tributaries of the Paria River include North Creek, Henrieville Creek, Kitchen Canyon, and Cottonwood Creek. The Paria River is the only stream in the drainage that has been catalogued by UDWR. There are no catalogued lakes or reservoirs in the drainage.

The Kaiparowits Plateau drainage (KPD), Hydrologic Unit 14070006, encompasses approximately 1513 mi² of Kane, Garfield, and San Juan Counties in south central Utah (Figure 3). The drainage includes the streams draining the Kaiparowits Plateau into Lake Powell and is bounded by the Cockscomb to the west, the Escalante Mountains to the north, and the Straight Cliffs to the northeast. Headwaters of the drainage reach to 5000 feet elevation, while streams terminate in Lake Powell at 3700 feet. Wahweap Creek, Last Chance Canyon, and Croton Canyon are the primary sub-drainages. None of the streams in the drainage are catalogued by UDWR. Lake Powell is the only catalogued flat water.

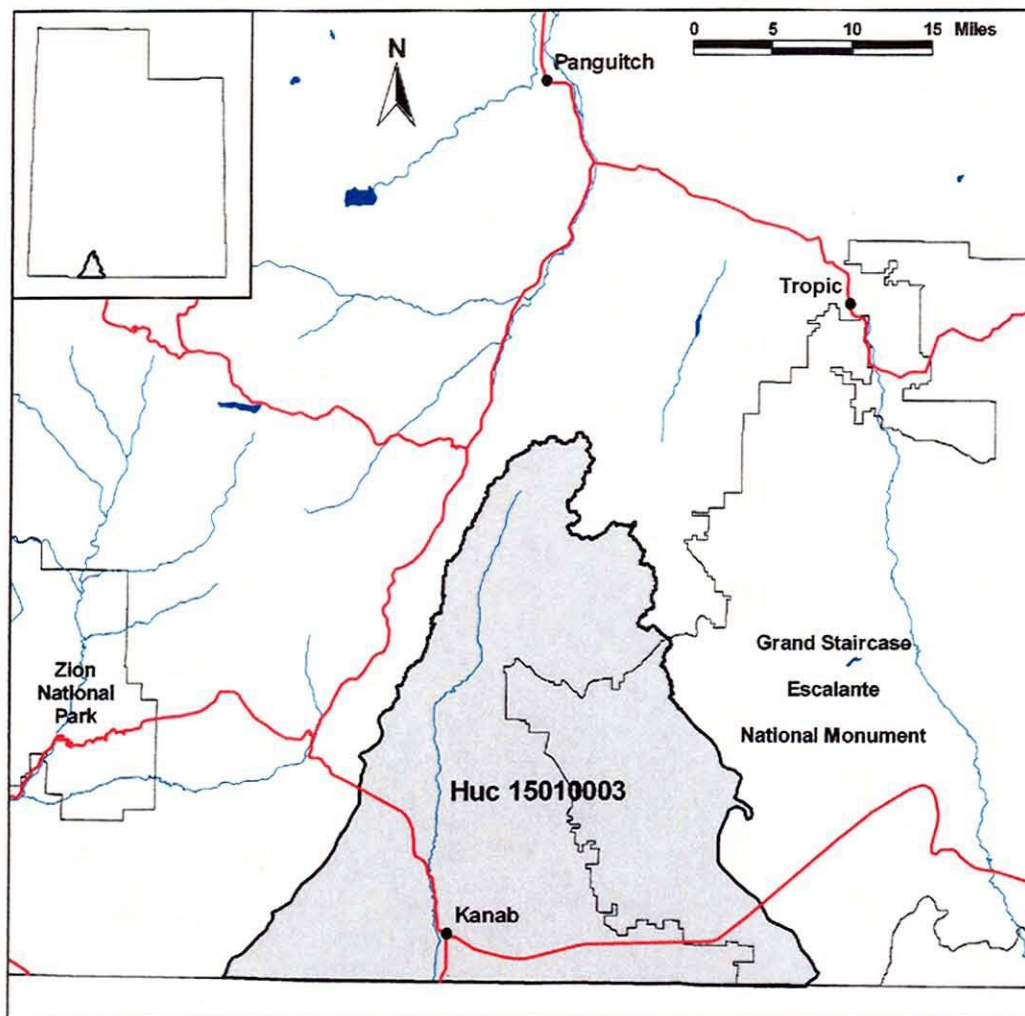


Figure 1. Map of the Kanab Creek Hydrologic Unit 15010003.

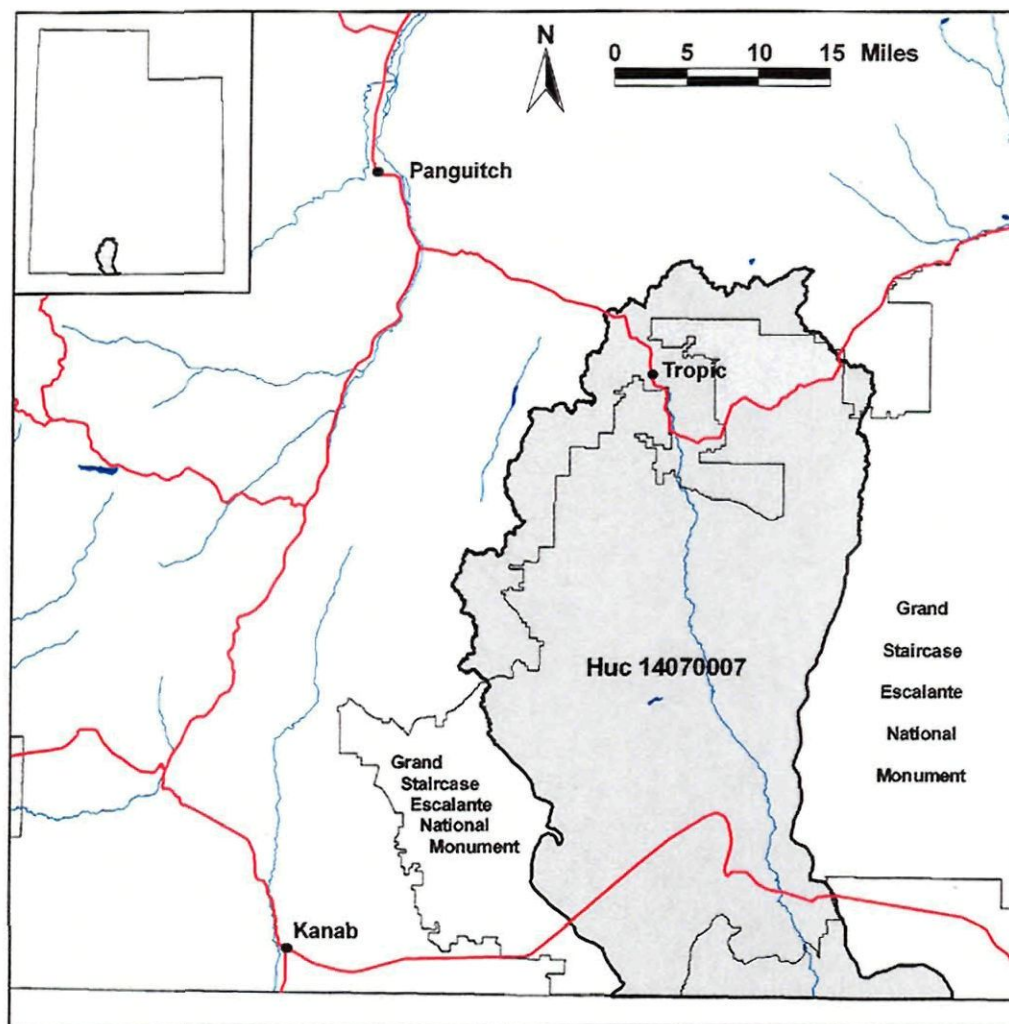


Figure 1. Map of the Paria River Hydrologic Unit 1470007.

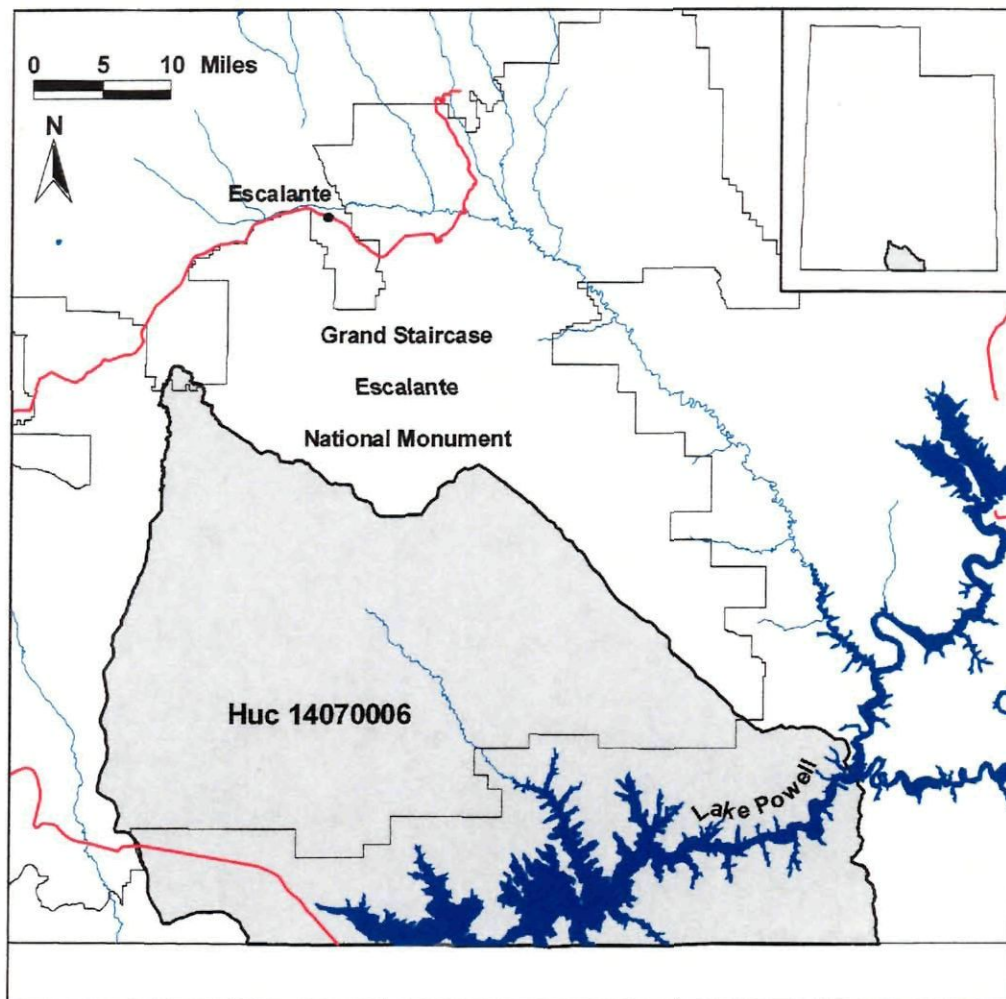


Figure 1. Map of the Kaiparowits Plateau Hydrologic Unit 14070006.

EXISTING RESOURCES

Physical

Only limited aquatic resources are found within these drainages. Headwater streams originate in conifer forests at 7000-8000 feet. The drainages then flow through arid desert and canyon country. Most stream channels are intermittent; continuous flow is usually associated with perennial springs or accumulated discharge. A total of 30 perennial streams (35 stream sections; 207 stream miles) are listed for the three drainages (Appendix A). Most stream sections in the drainages are first order (n=29; 126 stream miles), with a limited number of second order streams (n=6; 81 stream miles) (Table 1).

Lake Powell is the only significant flat water in the three drainages. 22 additional lakes, ponds, and reservoirs are listed (Appendix A, Table 2), for a total of 23 flat waters covering over 168,000 surface acres (just 59 acres outside of Lake Powell).

Table 1. Summary of streams in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units according to stream order.

Stream Order	Miles of Stream	Number of Stream Sections*
Hydrologic Unit 15010003 (Kanab Creek Drainage)		
1	44.0	13
2	49.7	4
Total	93.7	17
Hydrologic Unit 14070007 (Paria River Drainage)		
1	68.0	10
2	17.6	1
Total	85.6	11
Hydrologic Unit 14070006 (Kaiparowits Plateau)		
1	14.2	6
2	13.2	1
Total	27.4	7

* - Because only two streams among these units are catalogued, "stream section" is based on stream order, rather than an assigned section.

Table 2. Summary of streams, lakes and reservoirs in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units according to sport fish inventory classification.

Sport Fish Class*	Miles of Stream	Number of Stream Sections	Lakes / Reservoirs. Surface Acres	Number of Lakes / Reservoirs
1	0	0	168,240	1
2	0	0	0	0
3	0	0	0	0
4	29.7	2	0	0
5	0	0	0	0
6	0	0	0	0
Not Rated	177.0	33	58.6	22
Total	206.7	35	168,298.6	23

* - The sport fish classification is based upon ratings of esthetics, availability and productivity. Class 4 streams are typically poor in quality with limited fishery value. See Appendix D for general definitions and the UDWR Stream Survey Manual for more detailed information on the stream and lake sport fish classification system.

Limnology/Chemical

Limnological and chemistry data for the drainage are limited (Table 3).

Table 3. Water chemistry for streams in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Stream (Section)	Catalog Number	pH	Hardness (ppm)	M-ALK (ppm)	Conductivity (mhos)
Kanab Creek (01)	I AB	8.8	670	420	1550
Paria River (01)	I AC	8.2	917	273	2442

Biological

Aquatic species and reptiles found in the drainages are listed in Appendix B. Fish species present in the drainages include both native species and nonnative fish, which have been introduced as sport fish. Fish have been documented in 5 stream sections (81.7 miles) among the three hydrologic units (Table 4, Appendix A). None of these streams are considered viable sport fisheries. Fish have not been documented in any flat waters outside of Lake Powell (Appendix A).

Table 4. Summary of streams in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units according to types of fisheries present.

Fishery Status	Miles of Stream	Number of Streams Sections
Known to contain fish	81.7	5
One or more native fish species present	81.7	5
No fishery present or fishery status undetermined	125	30

Social

Kanab, Tropic, and Big Water are the largest population centers among the hydrologic units. The estimated Year 2000 population of Kane County, which houses the bulk of the three hydrologic units, was 6,046. The major industries within the drainages are tourism, agriculture, and ranching. Federally managed lands make up the majority of lands in each of these drainages. Kodachrome Basin State Park and a portion of Bryce Canyon National Park lie within Hydrologic Unit 14070007. Private interests control a very small percentage of land in each unit.

Table 5. Important social descriptors of the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Population centers:	Counties with land in the unit:
Hydrologic Unit 15010003 (Kanab Creek Drainage)	
Kanab (Pop. 3,564) Alton (Pop. 134)	Kane
Hydrologic Unit 14070007 (Paria River Drainage)	
Tropic (Pop. 508) Cannonville (Pop. 148) Henrieville (Pop. 159)	Garfield Kane
Hydrologic Unit 14070006 (Kaiparowits Plateau)	
Big Water (Pop. 417)	Garfield Kane San Juan
Proximity to major population centers:	Proximity to other waters:
Hydrologic Unit 15010003 (Kanab Creek Drainage)	
St. George—85 miles Salt Lake City—100 miles Las Vegas—200 miles	Lake Powell—60 miles
Hydrologic Unit 14070007 (Paria River Drainage)	
St. George—150 miles Salt Lake City—275 miles Las Vegas—260 miles	Lake Powell—140 miles
Hydrologic Unit 14070006 (Kaiparowits Plateau)	
St. George—140 miles Salt Lake City—370 miles Las Vegas—250 miles	
Land ownership:	Resource uses:
Hydrologic Unit 15010003 (Kanab Creek Drainage)	
BLM*—82% National Forest—11% Private—6% State—1%	Tourism/Recreation Agriculture Livestock
Hydrologic Unit 14070007 (Paria River Drainage)	
National Forest —58% BLM*—39% Private—2% National and State Park—1%	Tourism/Recreation Agriculture Livestock
Hydrologic Unit 14070006 (Kaiparowits Plateau)	
BLM*—44% Native American Reservation—26% National Forest—16% National Recreation Area—11% Water (Lake Powell)—2% State—1%	Tourism/Recreation Agriculture Livestock

* - BLM land holdings include Grand Staircase-Escalante National Monument.

MAJOR RESOURCE ISSUES

Major resource issues in the three drainages are listed in Table 6. Many of the issues are common to other drainages in Utah. The primary factors limiting fish and aquatic wildlife include intermittent flow, erosion, high sedimentation/siltation, lack of cover/instream habitat, water temperature, dewatering, and channelization. Due to the severity of these factors, all of the waters within the three drainages (except Lake Powell) have been deemed unsuitable for sport fish populations. A few waters sustain populations of native fish.

Table 6. Major resource issues and potential solutions for the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

PHYSICAL ISSUES <u>Issue</u> Flow, erosion, sedimentation, degraded riparian habitat	<u>Solutions</u> -Use of improved management practices for grazing, timber, travel management, agriculture, etc. -Channel/riparian restoration -Improved water delivery and irrigation systems
BIOLOGICAL ISSUES <u>Issue</u> Negative impacts of Non-native spp Disease Lack of data	<u>Solutions</u> -Fish eradication projects -Fish stocking policy -I & E on impacts of illegal/inadvertent introductions of aquatic nuisance species -Increased enforcement efforts to prevent illegal introductions -Continue statewide fish health program in conjunction with State Agriculture -I & E to limit spread of whirling disease or any other aquatic pathogen -Complete and implement native aquatic species inventory and monitoring plan -Pursue increased funding for biological sampling
SOCIAL ISSUES <u>Issue</u> Increasing population, urbanization and tourism / recreation; decreasing public access	<u>Solutions</u> -Create, restore, enhance aquatic habitats where possible

AQUATIC RESOURCE MANAGEMENT

Management Goal: To manage the existing resources of the hydrological units using an ecological approach so that environmental, scientific, intrinsic, aesthetic, and recreational values are maintained and/or enhanced.

Management Objectives:

- Objective 1: To provide a recreational sport fishery that meets public demands
- Objective 2: Obtain population, distribution, and/or life history information for native fish, amphibians, reptiles, and mollusks that occur in the Hydrologic Unit
- Objective 3: Maintain or enhance aquatic habitats, including riparian areas and watersheds present in the hydrologic unit.
- Objective 4: Maintain or increase public awareness of the value of aquatic resources. Increase recreational and educational opportunities associated with aquatic resources for youth in urban locations.
- Objective 5: Coordinate actions in order to avoid conflicts:

Management Actions

Sub-objectives, strategies and management actions to meet the objectives listed above are given in this section.

Objective 1: To provide a recreational sport fishery that meets public demands

Sport fisheries within the state are managed under various management concepts (Appendix C). Three streams are managed for native species (Table 7). Lake Powell is managed as a Basic Yield fishery. Table 8 lists the general objectives and management actions for specific waters, including stocking quotas, for sport-fishing waters in the three drainages.

Table 7. Summary of streams, lakes and reservoirs in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units according to sport fish management concept.

Management Concept	Miles of Stream	Number of Stream Sections	Lake/Reservoir Surface Acres	Number of Lakes/Reservoirs
Basic Yield	0	0	168,240	1
Intensive Yield	0	0	0	0
Trophy Fishery	0	0	0	0
Wild Fishery	0	0	0	0
Native Species	81.7	5	0	0
Unclassified	125	30	58.6	22
Total	206.7	35	168,298.6	23

Table 8. Summary of sub-objectives and management actions, for fish populations in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units. Waters are listed by Sport Fish Management Concept.

BASIC YIELD WATERS (BY)				
Description	Provides the majority of fishing opportunity throughout the state. Management focus is on family oriented recreation utilizing the habitat capability for growing fish to a catchable size in the wild.			
Standard Objectives	1. Maintain an average catch rate of 0.5 fish /hr (\pm 0.25fish/hr) or 4 oz/hr (\pm 2 oz/hr) 2. Provide a positive net return to the creel when comparing a pound of stocked fish versus a pound of harvested fish 3. Maintain the an average size of 11 inches (range 9-14) for harvested trout or other species			
Water Name	Fish Present*	Species Stocked	Quota	Other Management Actions
Lake Powell	SHTF, SHGZ, BSLM, BSST, BSSM, CRBL, SFGR, SFBL, WE, NP, BHCH, BHBK, RT, CPCO, SRRD			
NATIVE SPECIES WATERS				
Description	These waters are marginal or unsuitable as sport fisheries, but do support populations of native fishes.			
Standard Objectives	1. Carry out any management actions that will help sustain populations of native fishes.			
Water Name	Fish Present	Other Management Actions		
Kanab Creek	DCSP, SKMT	Improve watershed and riparian conditions through cooperative projects as funding becomes available through the Watershed Restoration Initiative and Utah Partners for Conservation and Development.		
Paria River	DCSP	Improve watershed and riparian conditions through cooperative projects as funding becomes available through the Watershed Restoration Initiative and Utah Partners for Conservation and Development.		
Hackberry Canyon	DCSP	Improve watershed and riparian conditions through cooperative projects as funding becomes available through the Watershed Restoration Initiative and Utah Partners for Conservation and Development.		

* See Appendix B for species codes.

Objective 2: Obtain population, distribution, and/or life history information for native fish, amphibians, reptiles, and mollusks that occur in the Hydrologic Unit

The majority of information for this objective will be obtained through the statewide inventory and monitoring programs for native fish, amphibians, reptiles, and mollusks (Greenfield and Fridell 1997). All known literature has been searched and compiled into a database. This database is updated annually. Gaps in locality and distribution information have been analyzed and are utilized in planning current monitoring and inventory surveys. Inventory and monitoring plans have been completed for sensitive and T&E species. Inventory and monitoring plans for species that are not considered sensitive or T&E are currently under development and will be implemented in the future.

Table 9. Summary of actions needed to meet Objective 2 in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Actions	Anticipated time for completion
Implement inventory and monitoring plans. Incorporate actions to obtain locality, distribution, and status information for native fish and amphibians into stream survey program. Conduct inventories for species of special concern. Coordinate with UDWR Salt Lake Office as necessary to contract outside entities to conduct inventories for non-sensitive native fish, amphibians, reptiles, and mollusks.	Inventory and monitoring plans for sensitive and T&E species are being implemented. Inventory surveys have been completed or will be completed in the future. Monitoring plans for species not considered to be sensitive are under development and will be implemented in the future.
Monitor and implement controls of nonnative competitive species.	Implement and maintain protocols established in the State of Utah, Policy for Fish Stocking and Transfer Procedures (Policy) in order to reduce detrimental interactions between aquatic communities as well as the introduction of diseases (Utah Division of Wildlife Resource, 2003).

Objective 3: Maintain or enhance aquatic habitats present in the hydrologic unit

All aquatic ecosystems including riparian habitats within the hydrologic unit should be protected or enhanced. The UDWR, through the habitat section, will work with land management agencies, local governments, and private individuals to minimize impacts to aquatic systems and wildlife associated with them from other land uses and developments in the hydrologic unit. Watershed improvements and enhancements of riparian areas will be completed by implementing cooperative projects through Utah Partners for Conservation and Development with funding from the Utah Watershed Restoration Initiative and other sources as they become available.

Bank erosion along Wahweap Creek currently threatens the Wahweap Hatchery. Plans are currently underway to secure funding and begin stabilization of Wahweap Creek in the area of the hatchery. Other potential habitat protection or enhancement work in the hydrologic units includes control of tamarisk in riparian areas.

Objective 4: Maintain or increase public awareness of the value of aquatic resources. Increase recreational and educational opportunities associated with aquatic resources for youth in urban locations.

Increasing public awareness, educating young anglers, and providing opportunities for angling near urban centers will be an important part of maintaining support for Division programs and building a constituency which values aquatic resources. Management actions under this objective will be conducted in conjunction with the DWR Conservation Outreach Section and through the Community Fisheries Program.

Potential new community fisheries in the area will include the proposed Jackson Flat Reservoir near Kanab.

Objective 5: Coordinate actions in order to avoid conflict:

Coordination with other division sections, state agencies, land and resource managers, private landowners, and stakeholders will be necessary to facilitate implementation of management actions. Division policies and protocols have been established to prevent conflicts.

Literature Cited

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- Utah Division of Wildlife Resources. 2003. Fish stocking and transfer procedures. Utah Division of Wildlife Resources Policy #W@-ADM-1. 19 p.

APPENDIX A

Water Resources

Table A1. List of streams in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units including section length, stream order, sport fish classification, sport fish management concept, and fish species present.

Stream (Section)	Catalog Number or UTM	Length (miles)	Stream Order	Elevation Range (ft)	Classifications		Known Fish Spp Present***	
					Sport Fish Class**	Mgmt Class*	Nonnative Species	Native Species
Hydrologic Unit 15010003 (Kanab Creek Drainage)								
Kanab Creek (01)	I AB	18.5	1	5030-7680	4	NS	RT	DCSP, SKMT
Kanab Creek (01)	I AB	11.2	2	4750-5030	4	NS		DCSP, SKMT
Unnamed tributary	120362812 E 4113441 N	0.4	1	5330-5370				
Tiny Canyon	120361861 E 4106907 N	1.3	1	5030-5190				
Cottonwood Canyon	120357104 E 4101376 N	2.0	1	4980-5270				
Water Canyon	120354329 E 4103085 N	2.1	1	5480-5700				
Johnson Wash (01)	I AB 010	24.1	2	5070-5700				
Skutumpah Creek	120382253 E 4131688 N	6.3	1	5950-6580				
Skutumpah Creek	120381180 E 4123651 N	4.7	2	5700-5950				
Mill Creek	120381139 E 4135982 N	4.0	1	6580-7160				
Water Canyon	120379994 E 4139360 N	2.9	1	7160-8350				
Thompson Creek	120377452 E 4138252 N	1.5	1	7080-7630				
Thompson Creek	120378657 E 4131793 N	9.7	2	5950-7080				
Tater Canyon	120376694 E 4137880 N	1.6	1	7080-7640				
Oak Canyon	120379447 E 4135256 N	2.4	1	6490-7040				
Unnamed spring trib.	120380999 E 4126095 N	0.5	1	5890-5920				
Seaman Wash	120389240 E 4108709 N	0.5	1	5920-6160				
Hydrologic Unit 14070007 (Paria River Drainage)								
Paria River (01)	I AC	32.4	1	4870-6300		NS		DCSP
Paria River (01)	I AC	17.6	2	4420-4870		NS		DCSP
North Creek	120407896 E 4174102 N	6.2	1	6470-7120				
Henrieville Creek	120418199 E 4160792 N	8.7	1	6060-6630				
Unnamed trib. of Dry Valley Creek	120420378 E 4154536 N	1.3	1	6140-6280				
Unnamed trib. of Dry Valley Creek	120419863 E 4155335 N	1.4	1	6140-6280				

Kitchen Canyon	120409534 E 4128289 N	4.2	1	4870-5470				
Cottonwood Creek	120420681 E 4127850 N	7.8	1	4720-5100				
Hackberry Canyon	120418081 E 4124687 N	2.0	1	4750-4870		NS		DCSP
Kitchen Corral Wash	120401858 E 4115317 N	2.5	1	5320-5445				
Meadow Canyon	120387774 E 4140273 N	1.5	1	7000-7350				
Hydrologic Unit 14070006 (Kaiparowits Plateau)								
Wahweap Creek	120441291 E 4105565 N	2.1	1	3890-3960				
Last Chance Canyon	120453751 E 4133087 N	4.7	1	4770-4980				
Last Chance Canyon	120458196 E 4127883 N	13.2	2	4230-4770				
Drip Tank Canyon	120453882 E 4130655 N	1.4	1	4770-4880				
Water Canyon	120461661 E 4123289 N	0.5	1	4310-4400				
Croton Canyon	120472291 E 4124422 N	2.7	1	4060-4230				
Aztec Creek	120501776 E 4101402 N	2.8	1	3700-3910				

* NS = Native Species.

** 4 = Waters typically poor in quality with limited fishery value.

*** RT=rainbow trout; SKMT=mountain sucker; DCSP=speckled dace.

Table A2. Reservoirs, lakes, and ponds that are present in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Water name	Location (UTM)	Elev (ft)	Surface Area (ac)	Max Depth (ft)	Classifications		Known Fish Spp Present***	
					Sport Fish Class	Mgmt Class*	Nonnative Species	Native Species
Hydrologic Unit 15010003 (Kanab Creek Drainage)								
Reservoir at mouth of Reservoir Cyn. NE of Alton	120373880 E 4147483 N	7,440	5.2					
Pond on Kanab Cr. E of Alton	120371262 E 4145100 N	7,080	0.8					
Pond N of Alton	120369115 E 4145059 N	7,140	2.7					
Pond S of Alton	120368680 E 4142099 N	6,660	1.8					
Flax Lake	120364744 E 4138369 N	7,420	1.5					
Sink Valley Wash - Upper	120371648 E 4138201 N	6,815	0.6					
Sink Valley Wash - Middle	120371755 E 4137698 N	6,770	0.5					
Sink Valley Wash - Lower	120371749 E 4137583 N	6,760	0.4					
Three Lakes Canyon - Upper	120360877 E 4111213 N	5,460	0.9					
Three Lakes Canyon - Middle	120360807 E 4111004 N	5,450	0.5					
Three Lakes Canyon - Lower	120360872 E 4110687 N	5,435	0.7					
Pond at E end of Kanab	120365235 E 4100599 N	4,960	1.2					
Reservoir S of Kanab, nr airport	120364884 E 4097602 N	4,860	16.7					
Johnson Lake	120381505 E 4107542 N	5,420	5.6					

Hydrologic Unit 14070007 (Paria River Drainage)								
Pond W of Tropic	120403128 E 4164809 N	6,430	2.4					
Pond on Paria R. 4 mi. S of Cannonville	120407898 E 4152247 N	5,630	3.5					
Pond on Horse Cr. 2 mi. SW of Canaan Peak	120426888 E 4160446 N	7,800	0.6					
Reservoir S of Adairville	120418356 E 4107811 N	4,400	4.3					
Reservoir at head of Sand Gulch in Kimball Valley	120406086 E 4116267 N	5,530	6.1					
Pond near US 89, 2.4 mi. NE of Buckskin Gulch	120405401 E 4116267 N	5,400	0.7					
Hydrologic Unit 14070006 (Kaiparowits Plateau)								
Lake Powell	I 382A	3700	168,240	542.0	1	BY	SHTF, SHGZ, BSLM, BSST, BSSM, CRBL, SFGR, SFBL, WE, NP, BHCH, BHBK, RT, CPCO, SRRD	SKFM, SKRZ, SQCR, CBHB, CBBT
Pond near US 89, 3.4 mi. SE of Big Water	120444577 E 4100086 N	3,920	1.2					
Pond in Smoky Hollow	120453612 E 4119757 N	4,720	0.7					

* - BY = Basic Yield.

** - 1 = Large bodies of water that satisfy heavy fishing pressure and support a high fish population in good condition of one or more species of game fish. Natural reproduction and/or stocking of small fish maintain an excellent sport fishery.

*** - SHTF=threadfin shad; SHGZ=gizzard shad; BSLM=largemouth bass; BSST=striped bass; BSSM=smallmouth bass; CRBL=black crappie; SFGR=green sunfish; SFBL=bluegill; WE=walleye; NP=northern pike; BHCH=channel catfish; BHBK=black bullhead; RT=rainbow trout; CPCO=common carp; SRRD=red shiner; SKFM=flannemouth sucker; SKRZ=razorback sucker; SQCR=Colorado pike minnow; CBHB=humpback chub; CBBT=bonytail chub.

APPENDIX B

Biological and Wildlife Resources

Table B1: Native fish species present in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Species	Species Code	Status	Presence			General Habitat Type Use
		State*	Kanab Creek	Paria River	Kaipa-rowits	
Speckled dace (<i>Rhinichthys osculus</i>)	DCSP		x	x		wide variety of water conditions and habitats, marshy wetlands to large streams
Mountain sucker (<i>Catostomus platyrhynchus</i>)	SKMT		x			riffles in clear, cold creeks and rivers in mountains
Razorback Sucker (<i>Xyrauchen texanus</i>)	SKRZ	E			x	large backwaters and off-channel habitats; slow runs, pools, and eddies
Colorado Pikeminnow (<i>Ptychocheilus lucius</i>)	SQCR	E			x	prefers pools
Humpback chub (<i>Gila cypha</i>)	CBHB	E			x	deep, swift water with rocky substrates
Flannelmouth Sucker (<i>Catostomus latipinnis</i>)	SKFM				x	temperate streams in a variety of habitats; streams occasionally turbid
Bonytail Chub (<i>Gila elegans</i>)	CBBT	E			x	swifter sections of rivers, along with calmer pools and backwaters

* E - listed under the Endangered Species Act.

Lentsch L.D., S. C. Hansen, M. J. Perkins, P. D. Thompson and J. J. Wallace. 1995. Quick Reference, Native Fish, Amphibians, and Reptiles of Utah. Publication Number 95-20. Utah Division of Wildlife Resources. 1594 West North Temple Salt Lake City Utah.

Table B2: Introduced fish species present in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Species	Species Code	Introduction Class	Presence			General Habitat Type Use
			Kanab Creek	Paria River	Kaipa-rowits	
Rainbow trout (<i>Onchorynchus mykiss</i>)	RT	Sport fish	x		x	wide range of habitat including large, deep lakes, rivers and small streams
Largemouth bass (<i>Micropterus salmoides</i>)	BSLM	Sport fish			x	wide range of warm water habitats such as small, shallow lakes, ponds, large slow rivers
Smallmouth bass (<i>Micropterus dolomieu</i>)	BSSM	Sport fish			x	medium to large cool lakes and streams
Striped Bass (<i>Morone saxatilis</i>)	BSST	Sport fish			x	marine, or large lakes and impoundments
Northern Pike (<i>Esox lucius</i>)	NP	Sport fish			x	lakes reservoirs and large streams with little current and abundant aquatic vegetation
Walleye (<i>Stizostedion vitreum</i>)	WE	Sport fish			x	prefer cold clean lakes and clear rivers

Bluegill sunfish (<i>Lepomis macrochirus</i>)	SFBL	Sport fish			x	small, warm streams, ponds, and shallow areas of lakes at low elevations
Black Crappie (<i>Pomoxis nigromaculatus</i>)	CRBL	Sport fish			x	warm lakes, ponds, sloughs, and backwaters, usually among vegetation
Green Sunfish (<i>Lepomis cyanellus</i>)	SFGR	Sport fish			x	small, warm streams, ponds, and shallow areas of lakes at low elevations
Channel Catfish (<i>Ictalurus punctatus</i>)	BHCH	Sport fish			x	warm shallow lakes and reservoir, deep pools or runs in small to large rivers
Black Bullhead (<i>Ictalurus melas</i>)	BHBK	Sport fish			x	warm shallow lakes and reservoir, deep pools or runs in small to large rivers
Common Carp (<i>Cyprinus carpio</i>)	CPCO	Food source/ sportfish			x	most warm to cool water habitat types
Red Shiner (<i>Notropis lutrensis</i>)	SRRD				x	small to medium turbid rivers
Threadfin shad (<i>Dorosoma petenense</i>)	SHTF	Fish forage			x	open water of lakes, and medium to large rivers
Gizzard Shad (<i>Dorosoma cepedianum</i>)	SHGZ	Fish forage			x	open water of lakes, and medium to large rivers

Table B3: Mollusks documented in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units. Records are very limited; more mollusk species are likely present.

Species	Status	Presence			General Habitat Type Use
	State	Kanab Creek	Paria River	Kaiparowits	
Kanab ambersnail (<i>Oxyloma haydeni</i>)		x			

Table B4: Amphibians present in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Species	Status	Presence			General Habitat Type Use
	State	Kanab Creek	Paria River	Kaiparowits	
Northern Leopard frog (<i>Rana pipens</i>)		x	x	x	slowly flowing streams, springs, marshes, ponds,
Tiger salamander (<i>Ambystoma tigrinum</i>)		x	x	x	quiet water of ponds, streams, lakes, reservoirs
Great plains toad (<i>Bufo cognatus</i>)				x	habitat includes grasslands of the prairie and other drier bushy areas.
Woodhouse toad (<i>Bufo woodhousii</i>)		x	x	x	near wetlands/streams associated with grasslands, sagebrush flats, woods, desert streams, flood plains.
Great Basin spadefoot (<i>Spea intermontana</i>)		x	x	x	near wetlands/streams associated sagebrush flats, semi-desert shrub lands, and pinyon-juniper woodlands
Red-spotted Toad (<i>Bufo punctatus</i>)			x	x	deserts, rocky regions, and prairie grasslands, usually near permanent water or dampness
Canyon Tree Frog (<i>Hyla arenicolor</i>)				x	arid areas close to rocky washes, streams, and permanent pools

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Table B5: Reptiles present in the Kanab Creek (15010003), Paria River (14070007), and Kaiparowits Plateau (14070006) Hydrologic Units.

Species	Status	Presence			General Habitat Type Use
	State*	Kanab Creek	Paria River	Kaiparowits	
Common sagebrush lizard (<i>Sceloporus graciosus</i>)		x	x	x	sagebrush, open forested areas, canyon bottoms
Common Chuckwalla (<i>Sauromalus ater</i>)	SC			x	open flats and rocky areas, especially with large boulders
Great Basin collared lizard (<i>Crotaphytus collaris</i>)		x	x	x	arid regions to hardwood forests
Tiger whiptail (<i>Cnemidophorus tigris</i>)		x	x	x	arid to semi-arid deserts to open woodlands where vegetation is sparse
Plateau striped whiptail (<i>Aspidoscelis velox</i>)		x	x	x	pinyon-juniper woodlands and ponderosa pine forests at 5500-6000 ft
Common side-blotched lizard, (<i>Uta stansburiana</i>)		x	x	x	semi-arid regions with coarse, gravelly soil
Long-nosed Leopard lizard (<i>Gambelia wislizenii</i>)		x	x	x	sandy or gravelly soil with sparse vegetation
Desert spiny lizard (<i>Sceloporus magister</i>)		x	x	x	arid and semi-arid low elevation with vegetation and rocks
Plateau lizard (<i>Sceloporus tristichus</i>)		x	x	x	open woodlands, open grassy dunes and prairies
Ornate tree lizard (<i>Urosaurus ornatus</i>)		x	x	x	arid areas near streams or dry washes, on trees, rocks, stone walls, or fence posts
Desert night lizard (<i>Xantusia vigilis</i>)	SC			x	arid and semi-arid rocky areas, often among fallen vegetation
Greater short-horned lizard (<i>Phrynosoma hernandesi</i>)		x	x	x	Open, rocky or sandy plains to forested areas at elevations up to 9000 feet

Desert horned lizard (<i>Phrynosoma playtrhinus</i>)		x	x	x	sandy, gravelly soil, windblown sand and flat arid stretches where rocks or scrub vegetation is present
Western skink (<i>Eumeces skiltonianus</i>)		x			Forest, open oak and juniper -pinyon woodlands, along riparian areas with good cover
Terrestrial garter snake (<i>Thamnophis elegans</i>)		x	x	x	most moist areas near water
Gophersnake (<i>Pituophis catenifer</i>)		x	x	x	dry sandy pine-oak woodlands and fine flatwoods, cultivated fields, prairies, open brush lands, rocky deserts or chaparral
Long-nosed snake (<i>Rhinocheilus lecontei</i>)		x	x	x	dry open prairie and desert brushlands
Nightsnake (<i>Hypsiglena torquata</i>)		x	x	x	semi-arid and arid sandy or rocky situations from desert flats to heavy brush chaparral
Striped whipsnake (<i>Masticophis taeniatus</i>)		x	x	x	grass lands and arid brushy flatlands to rugged mountain terrain dominated by pinyon-juniper and open pine-oak woodlands
Glossy snake (<i>Arizona elegans</i>)			x	x	dry, open, sandy areas, coastal chaparral, creosote-mesquite desert, sagebrush flats, and oak-hickory woodland
Common king snake (<i>Lampropeltis getula</i>)		x	x	x	diverse: dry, rocky wooded hillsides to river swamps, prairie, desert, chaparral
Western patch-nosed snake (<i>Salvadora hexalepis</i>)			x	x	barren creosote desert flats, sagebrush, semi-desert, and chaparral
Smith's black-headed snake (<i>Tantilla hobartsmithi</i>)		x	x	x	open areas, ascending canyons and arroyos into open forests, and along river corridors
Sidewinder (<i>Crotalus cerastes</i>)	SC			x	arid desert flatlands with sandy washes or mesquite-crowned hammocks
Western rattlesnake, (<i>Crotalus oreganus</i>)		x	x	x	west/southwest facing rocky outcrops, talus slopes, and stony canyons
Prairie Rattlesnake (<i>Crotalus viridis</i>)				x	rocky outcrops, talus slopes, stony canyons, and prairie dog towns

SC – Species of Concern: species for which there is credible scientific evidence to substantiate a threat to continued population viability.

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APPENDIX C

UDWR Sport Fish Management Concepts

Definitions of Sportfishing Management Concepts according to A strategic plan for the comprehensive management of Utah's wildlife resources (UDWR 1992) and Fish Stocking and Transfer Procedures, UDWR Policy # W2ADM-1

Basic Yield Waters: Management focus is on family-oriented recreation. This management concept utilizes available habitat and biological productivity to grow fish to an acceptable size. These waters may be stocked with fingerling-sized fish or be sustained through natural reproduction. Generally catchable fish are stocked only to supplement the fishery, but they do not provide the majority of the harvest. In a few situations where avian or fish predators prohibit fingerling plants, catchable fish may be stocked. Catchables still provide a put-grow-and-take type fishery and are not stocked for immediate return as they are in "intensive yield waters." Although some large fish may be produced in basic yield waters, trophy-sized fish are not the goal of this type of management. A variety of cold and warm water fish species are managed under this concept.

Intensive Yield Waters: These waters provide fishing opportunity where angling pressure is heavy or where habitat conditions are marginal for fish growth and survival. These waters are generally smaller than "basic yield waters" and are usually closer to urban centers or heavily used recreation sites. Management involves the stocking of catchable fish. These fish are stocked to provide immediate fishing opportunities. The fish are not intended to stay in the water and grow to a larger size. Family and especially "youth" recreation is the primary focus of this management strategy. Species management is mainly limited to rainbow trout. In some heavily used waters, albino rainbow trout are stocked so anglers can see that stocked fish are present. This type of stocking is usually not done in waters managed with native or wild trout.

Trophy Waters: Under this concept, waters are oriented toward producing quality fishing opportunities, not necessarily quantity. Management efforts are directed toward producing "larger than average" size fish. Habitat quality and water size are usually determinant factors. Trophy waters can be managed through either stocking or natural reproduction. Other angling use created under this concept is secondary to trophy fish production.

Wild Fish Waters: this concept allows the fish species and its habitat to dictate what can naturally be produced and sustained. Fisheries are maintained solely through natural reproduction. Whether or not this group can produce substantial fishing opportunities is not a primary management issue. The Wild Fish concept differs from the Basic Yield concept in that management efforts are directed toward sustaining fisheries that never require stocking, other than the initial transplant. Aquatic habitats under this concept are usually more pristine than those in other concepts, since it would be impossible to sustain a wild fishery in a degraded environment. Habitat preservation and enhancement receive emphasis under this concept, as do special regulations.

Because streams in the Kanab Creek, Paria River, and Kaiparowits Plateau Hydrologic Units did not fit any of these classifications, the UDWR Southern Region created a new class:

Native Species Waters: These waters are marginal or unsuitable as sport fisheries, but do support populations of native, non-threatened fish species. Any management actions are directed toward sustaining populations of native fishes.

Appendix D

General Definitions of Sport Fish Classes for Utah Waters

Many waters in Utah have been classified according to a system that rates their value as sport fisheries. According to this system, waters receive subjective numerical ratings for three criteria - esthetics, availability, and productivity. A final numerical rating and class are then determined from a weighted sum of the three, with productivity being the most important factor. A detailed description of the sport fish classification system is available in the UDWR Stream Survey Manual. This classification system and basic water inventory system is being revised to incorporate other resource values and factors. The definitions below from the UDWR Stream Survey Manual provide a general description of the classes.

Stream Classes

Class 1

Class 1 streams are the top quality fishing waters of the state. They should be preserved and improved for fishery and similar recreational uses. These streams are generally outstanding in natural beauty and of a unique type. They are accessible by modern car at suitable points, and larger waters are floatable with suitable launching facilities. Productivity is such that it supports high fish populations in good condition of one or more species of the more desirable game fish. Natural reproduction or the stocking of small fish maintains an excellent sport fishery.

Class 2

Class 2 waters are of great importance to the state fishery. These are productive streams with high esthetic value and should be preserved. Fishing and other recreational uses should be the primary consideration. They are moderate to large in size and may have some human development, such as farms or commercial establishments, along them. Many Class 2 streams are comparable to Class 1 except for size.

Class 3

Class 3 streams comprise approximately half of the total stream fishery habitat in Utah. These waters are important because they support the bulk of stream fishing pressure in Utah. Water developments involving class 3 waters should be planned to include fisheries as a primary use, and fishery losses should be minimized and enhanced when possible.

Class 4

Class 4 streams are typically poor in quality with limited fishery value. Fishing should be considered a secondary use. A few Class 4 waters provide an important catchable fishery in areas where no other fishery exists. Water development plans should include proposals to enhance fisheries values where feasible.

Class 5

Class 5 streams are now practically valueless to the fishery resource. Other water uses should take preference over fisheries in planning water developments; however, many water in this class could provide valuable fisheries if additional water could be provided.

Class 6

Class 6 streams are those stream channels that are dewatered for significant time period during the year. Many of the stream sections now in this class could support good to excellent fish populations if appropriate minimum flows could be provided. Planning of water developments should include consideration for restoration of these dewatered sections of stream.

Lake Classes

Class 1

Class 1 Lakes are large bodies of water that satisfy heavy fishing pressure. Productivity is such that it supports a high fish population in good condition of one or more species of game fish. Natural reproduction and/or stocking of small fish maintain an excellent sport fishery. It is essential to maintain the fishery value of these waters to provide fishing for Utah residents and as tourist attractions.

Class 2

Class 2 lakes are also important to the Utah economy because of their recreational value. Productivity is such that it supports a high fish population in good condition of one or more species of game fish. Coldwater lakes in this class require stocking of small fish to maintain good fishing. Some Class 2 lakes are comparable to Class 1 except for size; others have low esthetic ratings or biological deficiencies. It is essential to maintain the fishery value of these waters to provide fishing for Utah residents and as tourist attractions.

Class 3

Class 3 waters are, in some instances, attractions for out-of-state anglers but normally provide angling for those who reside 50 miles or less from each lake or reservoir. Because of the geographical location of some Class 3 waters in areas where there is little fishing, they may be very important locally. These key lakes and reservoirs should be enhanced for fishery production if possible.

Class 4, 5, 6

Class 4, 5, and 6 lakes and reservoirs contribute little to the fishery resource in Utah. Some of these lakes and reservoirs do provide fishing where little fishery exists when stocked with catchable trout.